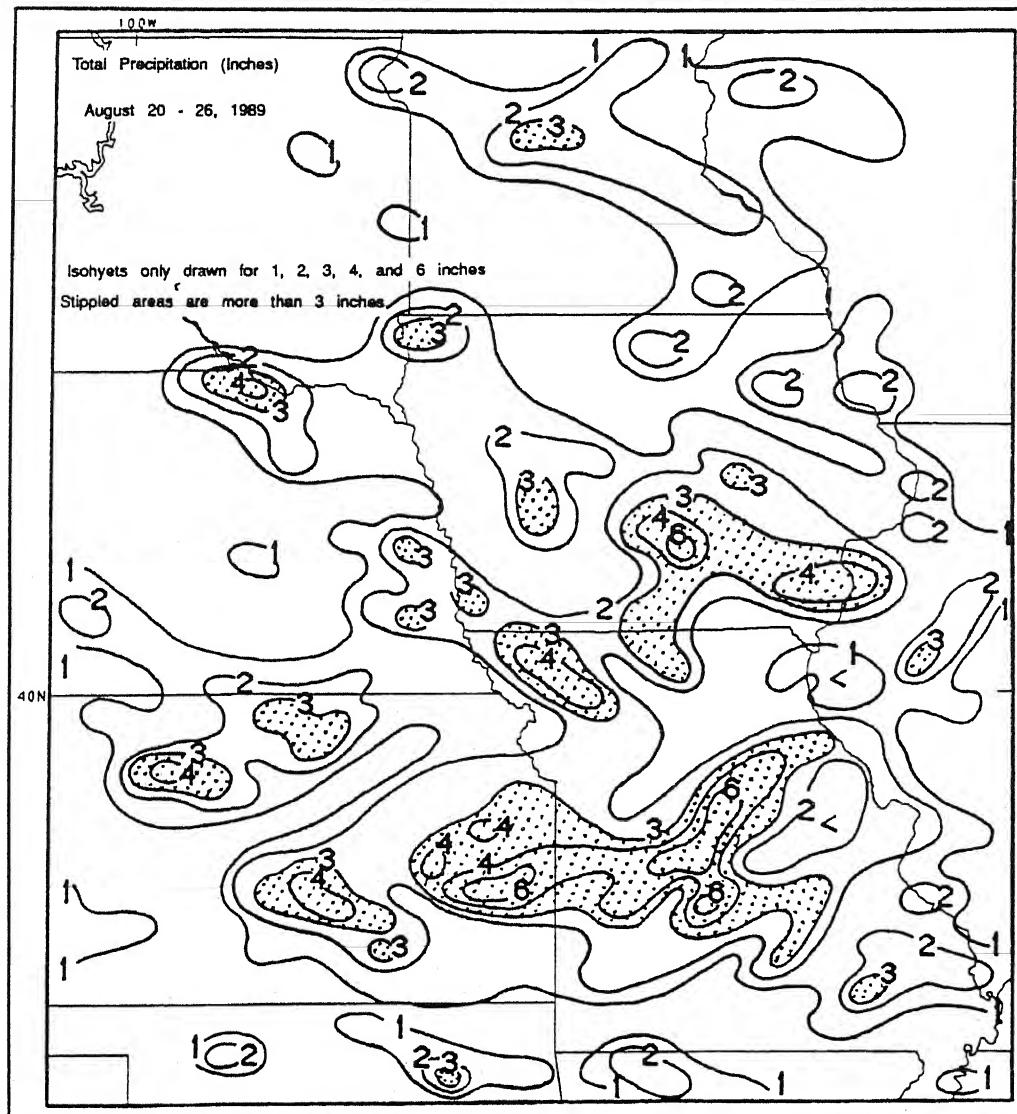


WEEKLY CLIMATE BULLETIN

No. 89/34

Washington, DC

August 26, 1989



ABUNDANT CONVECTIVE ACTIVITY IN ASSOCIATION WITH AN UPPER-AIR DISTURBANCE ON MONDAY AND TUESDAY AND A STATIONARY FRONT DURING THE LATTER HALF OF THE WEEK DUMPED WIDE-SPREAD, HEAVY RAINS (UP TO 8.3 INCHES) ON THE MIDDLE MISSISSIPPI VALLEY FOR THE FIRST TIME SINCE MID-JULY, PROVIDING SOME RELIEF FROM LONG-TERM DRYNESS IN THE REGION.

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE - NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- Highlights of major climatic events and anomalies.
- U.S. climatic conditions for the previous week.
- U.S. apparent temperatures (summer) or wind chill (winter).
- U.S. cooling degree days (summer) or heating degree days (winter).
- Global two-week temperature anomalies.
- Global four-week precipitation anomalies.
- Global monthly temperature and precipitation anomalies.
- Global three-month precipitation anomalies (once a month).
- Global twelve-month precipitation anomalies (every three months).
- Global three-month temperature anomalies for winter and summer seasons.
- Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

STAFF

Editor	David Miskus
Associate Editor	Jeffrey D. Logan
Contributors	Vernon L. Patterson Monica L. Pogue
	Paul Sabol Richard J. Tinker
Graphics	Robert H. Churchill

To receive copies of the Bulletin or to change mailing address, write to:

Climate Analysis Center, W/NMCS3
Attn: WEEKLY CLIMATE BULLETIN
NOAA, National Weather Service
Washington, DC 20233

For CHANGE OF ADDRESS, please include a copy of your old mailing label.

Phone: (301) 763-8071

WEEKLY CLIMATE BULLETIN REQUEST

- Please ADD my address to your mailing list.
- Please CHANGE my address on your mailing list.
- Please DROP my address from your mailing list.

Name _____

Organization _____

Address _____

City _____

State _____

Zip _____

GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF AUGUST 26, 1989

1. Western Canada and Alaska:

MILD CONDITIONS RETREAT.

While temperatures returned to more normal levels in much of Alberta, British Columbia, and the Northwest Territories, unusual warmth persisted in the Yukon and spread into southern portions of Alaska where departures reached $+5^{\circ}\text{C}$ [4 weeks].

2. Caribbean Islands:

DRYNESS CONTINUES.

Even though moderate rains (greater than 50 mm) fell on the Windward Islands, most totals were below normal. Elsewhere, scattered showers dropped less than 10 mm. Depressed tropical storm activity in the area is contributing to the moisture deficits [10 weeks].

3. Northern Argentina, Uruguay, Southern Brazil:

UNUSUAL WARMTH SUBSIDES.

Cooler air infiltrated the area, dropping temperatures to below normal levels in Argentina while departures averaged slightly above normal ($+2^{\circ}\text{C}$) in southern Brazil [Ended at 2 weeks].

4. Europe:

ATYPICAL HEAT PREVAILS.

Southerly flow brought air from the Sahara desert to portions of Western Europe where temperatures approached 42°C in Spain. Positive departures were as much as $+6^{\circ}\text{C}$ in southern France. Even though temperatures continued to average above normal across eastern Europe, departures diminished relative to last week [6 weeks].

5. Romania, Moldavian and Ukrainian S.S.R.:

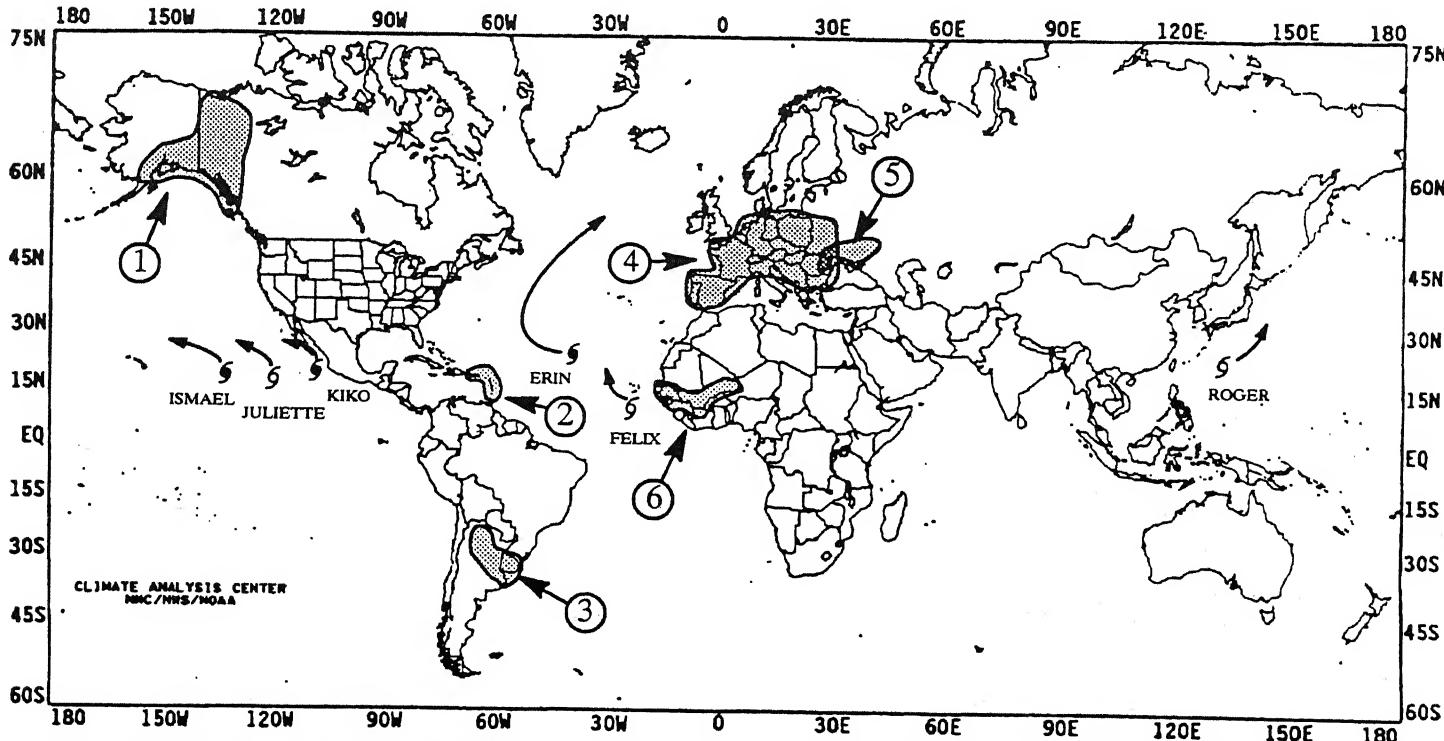
MOISTURE REMAINS SHORT.

Most locations remained dry for the second consecutive week as only a few stations received rainfall in excess of 10 mm. Maturing crops are being stressed by the dry conditions especially in southern Ukraine (see Special Climate Summary) [8 weeks].

6. West Africa:

INUNDATING PRECIPITATION FALLS.

An extensive area of thunderstorms dumped over 100 mm of rain at many locations. Property damage from the torrential rain was reported in Ghana, while flooding was a likely event in southern Mali where as much as 177 mm fell in 24 hours (29 mm for the week) [Episodic Event].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF AUGUST 20 THROUGH AUGUST 26, 1989

Unseasonably cold weather prevailed across the Pacific Northwest and northern Rockies, helping to generate the season's first snowfall in parts of Yellowstone and the Grand Tetons. Meanwhile, high pressure located off the Florida coast brought hot and humid conditions to the Southeast while cooler air pushed into the Northeast. Between these air masses, numerous showers and strong thunderstorms broke out along a stationary front in the central Great Plains, the middle Mississippi and lower Ohio Valleys, and the southern half of the Appalachians. Damaging winds, large hail, torrential downpours, and a few tornadoes accompanied some of these storms. A weak tropical wave triggered scattered showers and thunderstorms in Florida and along the central Gulf Coast. Early in the week, an upper-air disturbance produced severe weather in Kansas and Oklahoma as 4 to 6 inches of rain deluged the Tulsa, OK area in four hours early Sunday. On Monday and Tuesday, intense thunderstorms dumped up to 4 inches of rain on parts of Missouri and Iowa (see front cover) while severe weather developed ahead of a warm front in the eastern Dakotas and western Minnesota. Farther west, a strong cold front moved into the northern Pacific coast, bringing heavy showers to parts of Washington and Oregon. By mid-week, a second cold front progressed southeastward out of Canada into the upper Ohio Valley and western New England. The front eventually moved off the New England Coast, bringing cooler and drier air to the Northeast, but stalled across the middle Mississippi and lower Ohio Valleys. Slow-moving, heavy thunderstorms erupted along the stationary front and caused some flooding in central Indiana, northern Kentucky, and central West Virginia. In the West, the cold front slowed its eastward progression as waves of low pressure formed along the front. Heavy rain fell in eastern Washington, northern Idaho, and western Montana while light snow blanketed higher elevations of the Rockies. Towards the end of the week, the cold front in the West became stationary from western North Dakota southward to northern New Mexico. Locally heavy showers and thunderstorms continued to develop along the stationary front in the East, which stretched from Kansas eastward to the Carolinas by the weekend. To the south of the front, oppressive heat and humidity was recorded throughout the Southeast.

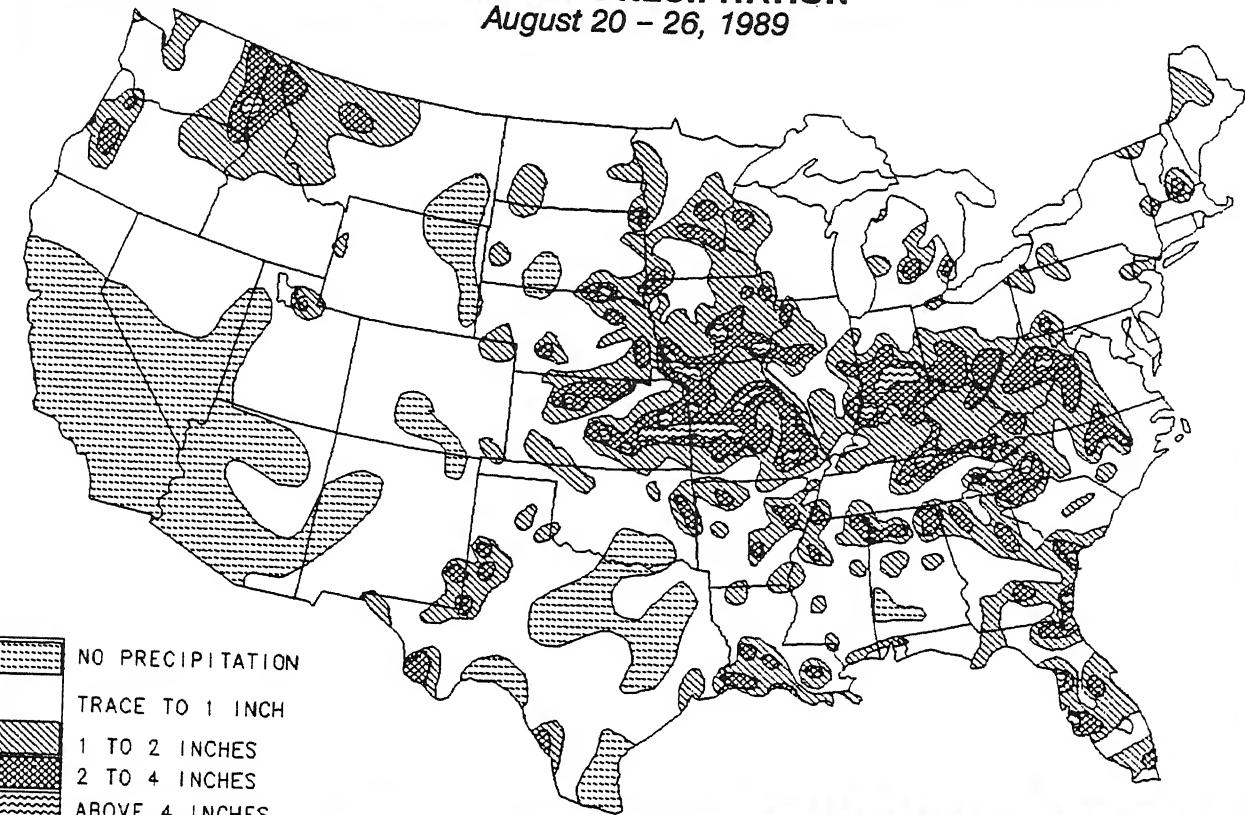
According to the River Forecast Centers, the greatest weekly amounts were recorded in the central Great Plains and the middle Mississippi and lower Ohio Valleys (see Table 1 and front cover). Between 4 and 8 inches of rain were measured at several locations in eastern Kansas, western Missouri, southern Iowa, and central Indiana. Elsewhere, moderate to heavy totals occurred in the northern parts of the Cascades, Intermountain West, and Rockies, in sections of western Texas, the upper Mississippi and eastern Tennessee Valleys, and throughout the central and southern Appalachians. Light to moderate precipitation fell in the rest of the eastern half of the nation and across most of the High Plains. Little or no precipitation was observed in the southwestern quarter of the U.S., in eastern Texas and western Louisiana, and in parts of the mid-Atlantic and northern Appalachians. In Alaska, locally excessive rainfall inundated much of south-central Alaska as more than 4 inches of rain fell on Anchorage, AK within a 24-hour period. In contrast, the remainder of Alaska generally received below normal precipitation. This did not help long-term dryness in southeastern Alaska, where only 40 to 80 percent of normal precipitation has fallen since January 1. Heavy precipitation from thundershowers soaked the extreme eastern and western sections of Hawaii, but near normal amounts of rain fell elsewhere.

Weekly temperatures averaged above normal in the nation's midsection and throughout the Southeast. The greatest positive departures (between +5°F and +6°F) were located in the northern Great Plains and the Tennessee and middle Mississippi Valleys (see Table 2). Later in the week, however, high humidities and readings in the upper nineties produced apparent temperatures greater than 105°F across much of the Southeast (see Figure 2). In sharp contrast, unseasonably cold conditions dominated the western third of the country. Temperatures averaged between 5°F and 11°F below normal from southern California northward to Idaho and western Montana (see Table 3). Minimum temperatures dipped into the thirties across most of the Rockies and Great Basin while a few stations in western Wyoming recorded lows in the mid-twenties (see Figure 1). Near to slightly below normal temperatures were found in the Great Lakes and the Northeast.

TABLE 1. Selected stations with 2.50 or more inches of precipitation for the week.

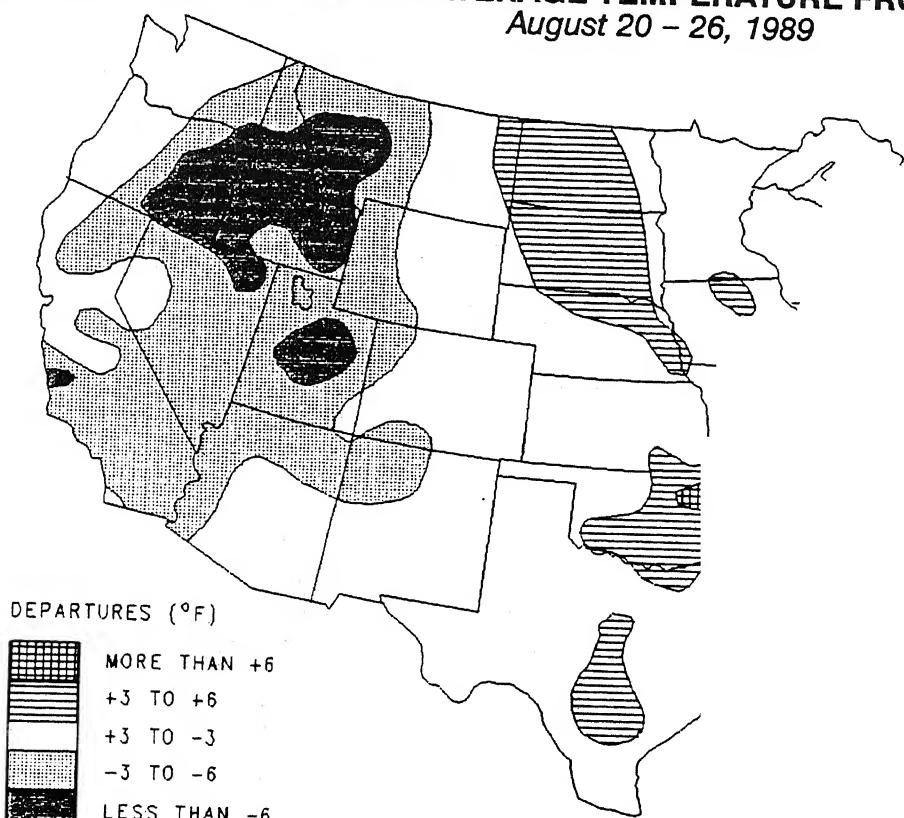
STATION	TOTAL (INCHES)	STATION	TOTAL (INCHES)
ANCHORAGE, AK	5.70	TAMPA, FL	3.28
ILIAMNA, AK	5.12	COLUMBIA, MO	3.16
HIOOLYMAN, HAWAII, HI	4.76	GREAT FALLS/MALMSTROM AFB, MT	3.12
BEAUFORT MCAS, SC	4.55	VERO BEACH, FL	3.01
DES MOINES, IA	4.49	CONCORDIA, KS	2.97
ELKINS, WV	4.37	TALKEETNA, AK	2.96
JACKSONVILLE, FL	4.22	JACKSONVILLE/CECIL NAS, FL	2.94
INDIANAPOLIS, IN	4.15	BLYTHEVILLE AFB, AR	2.82
GREAT FALLS, MT	3.84	ALEXANDRIA, MN	2.72
HUNTINGTON, WV	3.57	GREENVILLE, SC	2.70
LAFAYETTE, IN	3.35	LEWISTON, ID	2.57

OBSERVED PRECIPITATION
August 20 - 26, 1989



CLIMATE ANALYSIS CENTER / NOAA

DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)
August 20 - 26, 1989



CLIMATE ANALYSIS CENTER / NOAA

EXTREME MINIMUM TEMPERATURE (°F)
August 20 - 26, 1989

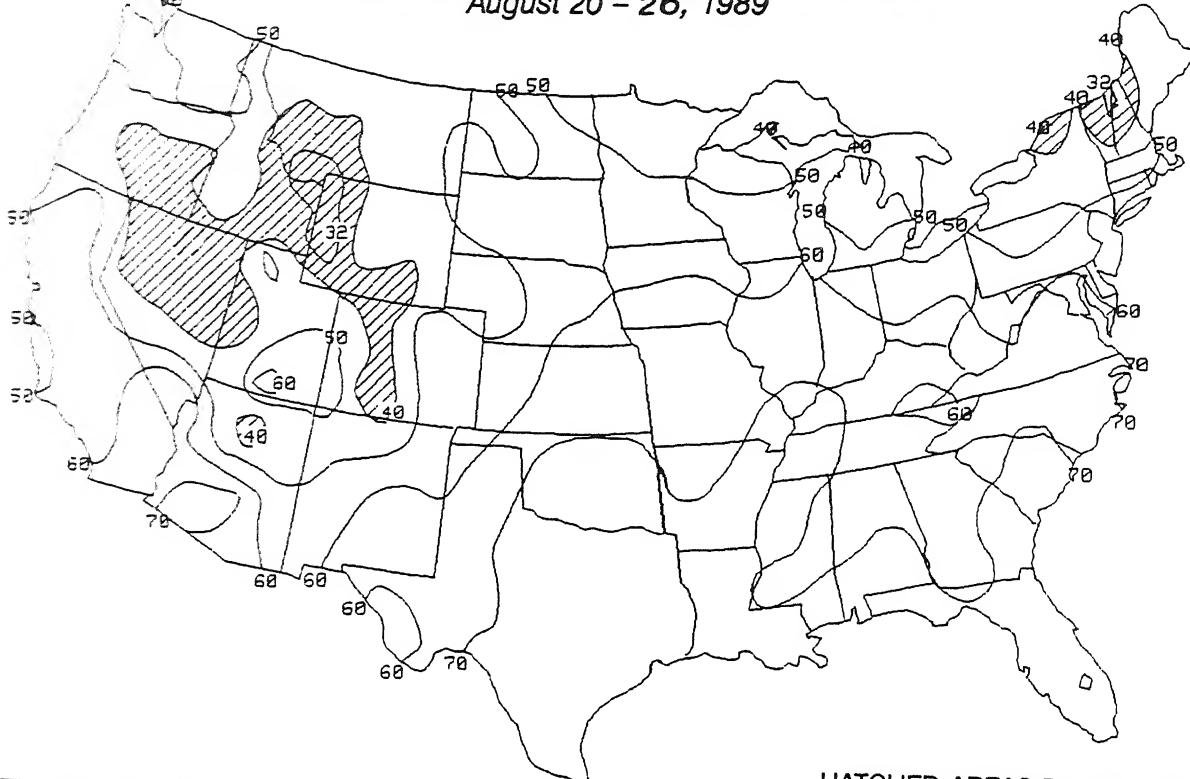


Figure 1. Extreme minimum temperatures (°F) during August 20-26, 1989. Unseasonably cold air invaded the western third of the nation as lows dipped below 40°F in parts of the Rockies and Great Basin and into the twenties in sections of Wyoming and Montana.

TABLE 2. Selected stations with temperatures averaging 4.5°F or more ABOVE normal for the week.

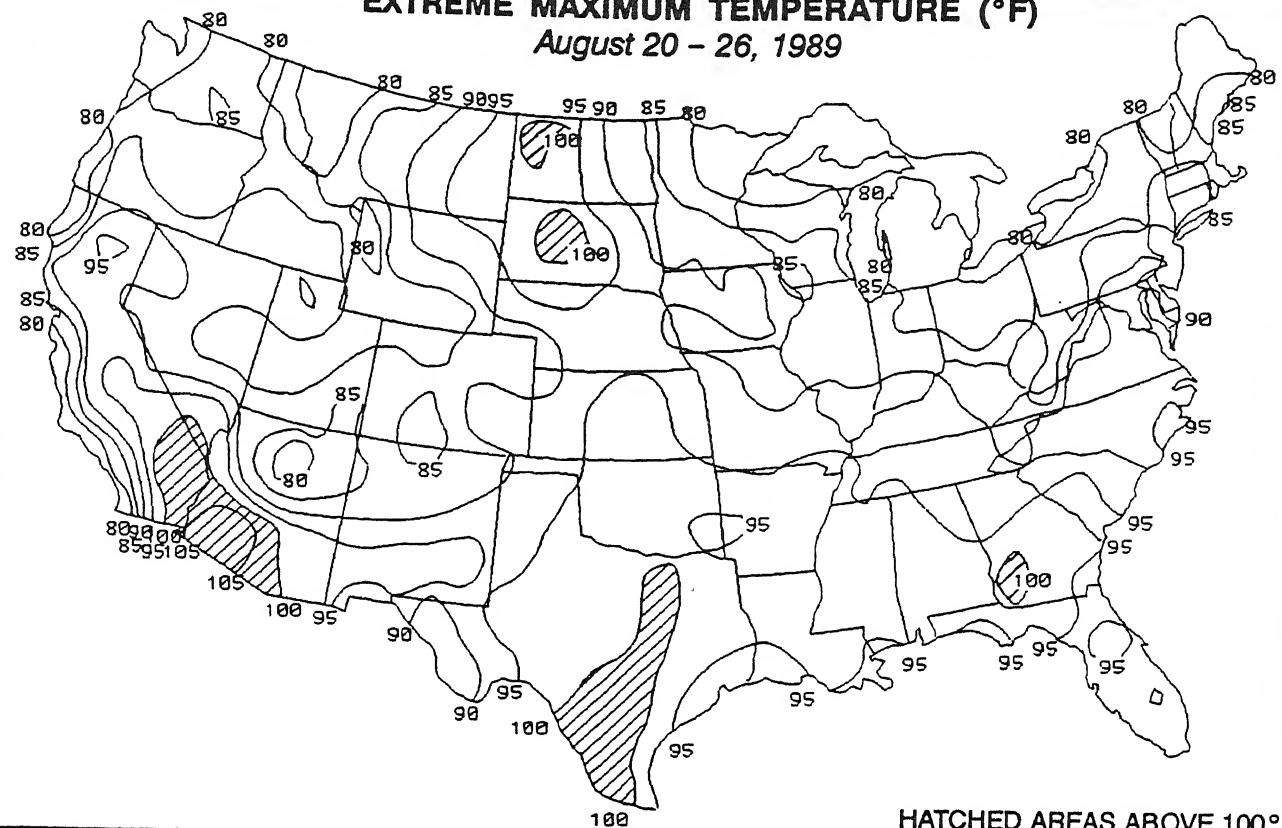
STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
BARROW, AK	+7.2	44.3	MONTGOMERY/MAXWELL AFB, AL	+5.2	86.4
PADUCAH, KY	+6.1	82.3	COLUMBUS, GA	+4.9	85.2
PIERRE, SD	+5.8	77.9	ATLANTA, GA	+4.9	82.7
FAYETTEVILLE, AR	+5.7	81.4	YAKUTAT, AK	+4.9	57.4
TULSA, OK	+5.5	86.2	MCALESTER, OK	+4.8	85.6
MEMPHIS, TN	+5.5	85.3	JACKSON, TN	+4.8	83.2
BOWLING GREEN, KY	+5.5	81.7	NASHVILLE, TN	+4.8	82.6
DICKINSON, ND	+5.5	72.2	GREENWOOD, MS	+4.7	84.8
WEST PLAINS, MO	+5.4	80.8	BEEVILLE NAS, TX	+4.6	89.0
EVANSVILLE, IN	-		FORT SMITH, AR	+4.5	84.5
			GULKANA, AK	+4.5	56.6

Stations averaging 5.0°F or more BELOW normal for the week.

STATION	DEPARTURE (°F)	AVERAGE (°F)
BURLEY, ID	-5.8	60.8
SPOKANE, WA	-5.7	61.1
KALISPELL, MT	-5.5	56.8
PENDLETON, OR	-5.5	65.1
LEWISTON, ID	-5.5	65.6
IMPERIAL, CA	-5.5	84.8
MT. WASHINGTON, NH	-5.4	40.8
BOZEMAN, MT	-5.3	57.9
CEDAR CITY, UT	-5.2	65.3
REDDING, CA	-5.2	75.0
BAKERSFIELD, CA	-5.2	76.3
SALT LAKE CITY, UT	-5.1	68.2
DAGGETT, CA	-5.0	80.5

EXTREME MAXIMUM TEMPERATURE (°F)

August 20 - 26, 1989



Hights in the 100's were found throughout the desert Southwest, and in parts of Texas, Georgia, and the Dakotas (top) while temperatures in the 90's combined with high humidities to send apparent temperatures over 100°F in the southeastern quarter of the nation (bottom).

EXTREME APPARENT TEMPERATURE (°F)

August 20 - 26, 1989

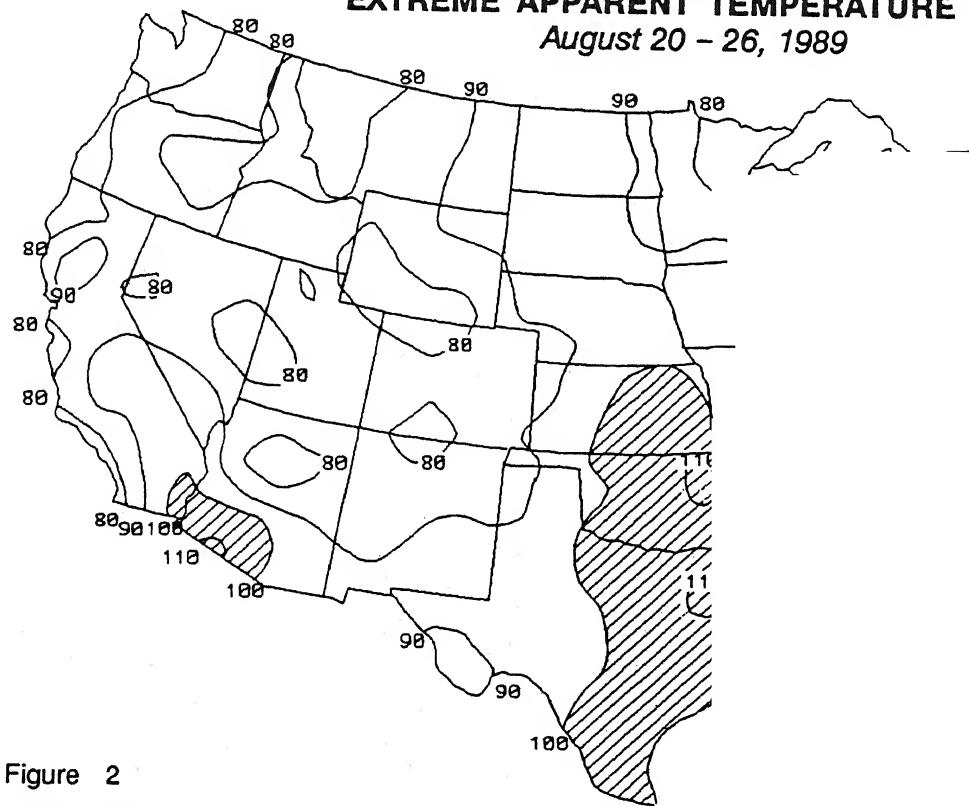
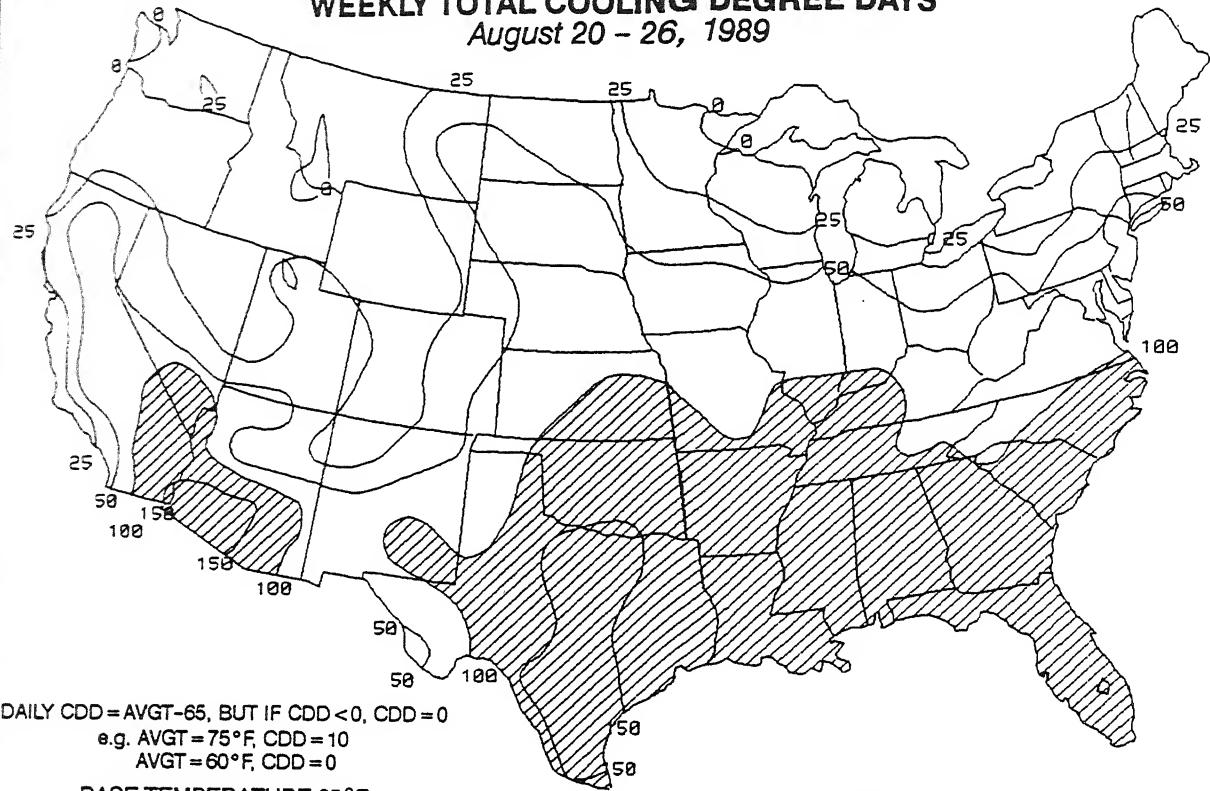


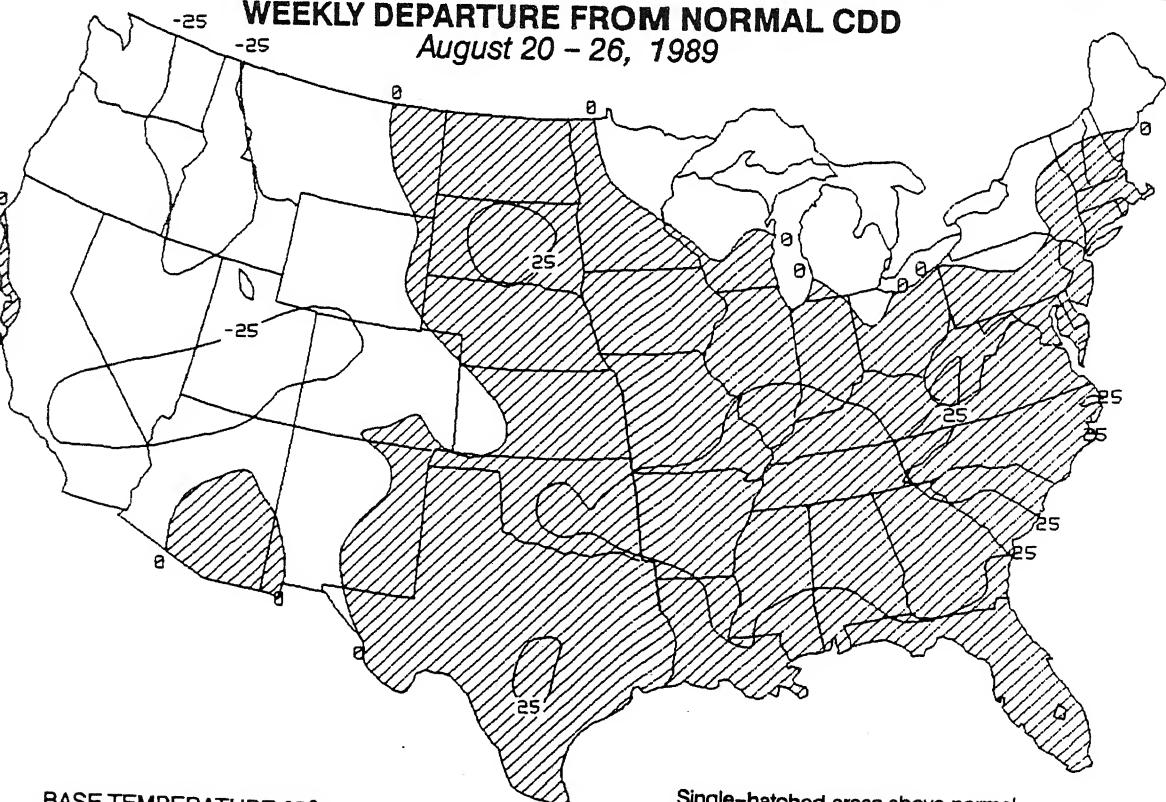
Figure 2

WEEKLY TOTAL COOLING DEGREE DAYS
August 20 - 26, 1989



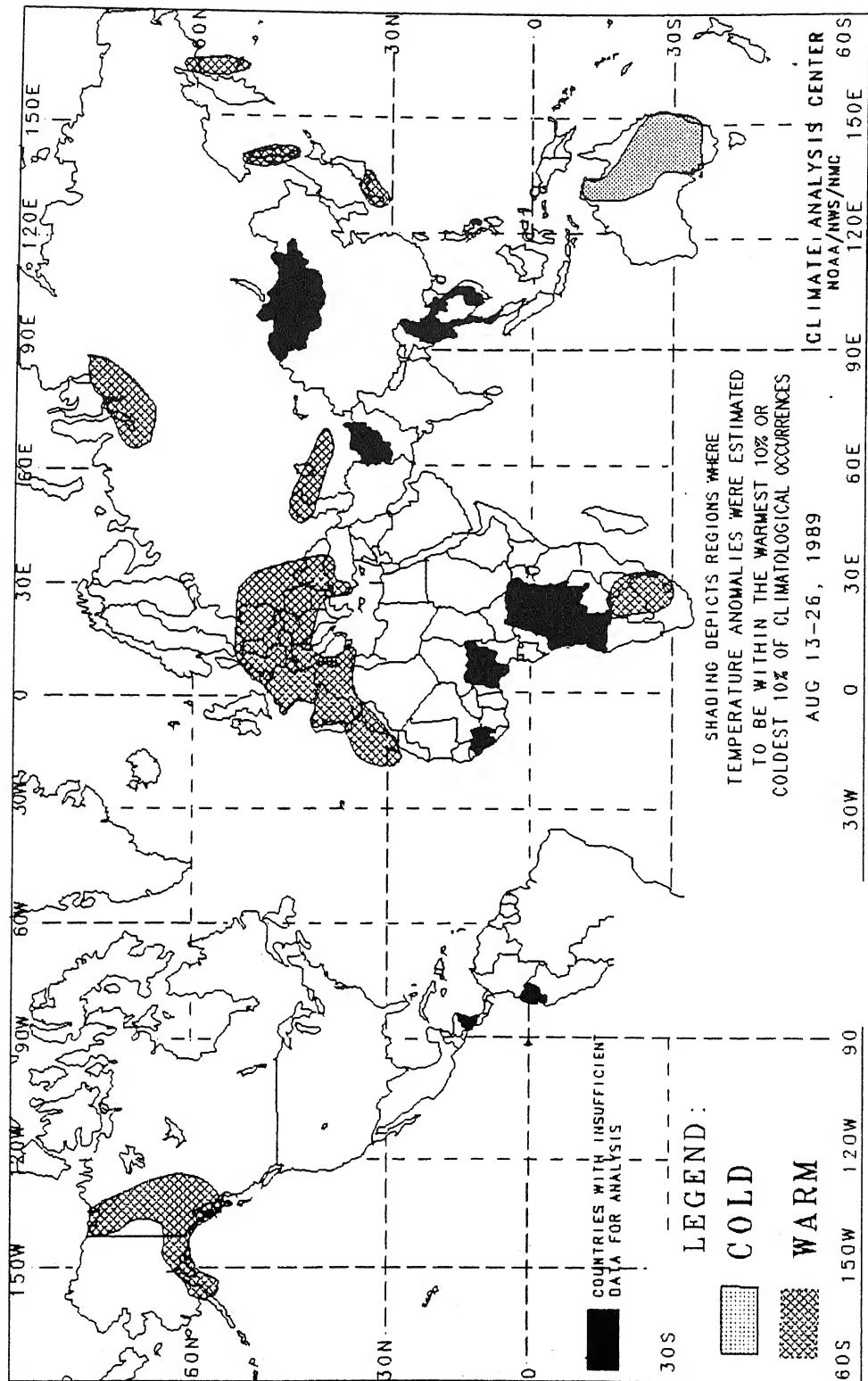
Weekly total CDD's surpassed 100 in the desert Southwest, the southern Great Plains and in the Southeast (top). Cool weather in the western third of the nation kept air-conditioning usage below normal while high temperatures in the central and eastern U.S. generated above normal demand (bottom).

WEEKLY DEPARTURE FROM NORMAL CDD
August 20 - 26, 1989



GLOBAL TEMPERATURE ANOMALIES

2 WEEKS



The anomalies on this chart are based on approximately 13 days of temperature observations. Many stations do not operate on a two-week time scale. As a result, estimated minimum temperature may have a wider range than the extent of son.

Temperature anomalies are not depicted until departures from normal exceed 1.5°C.

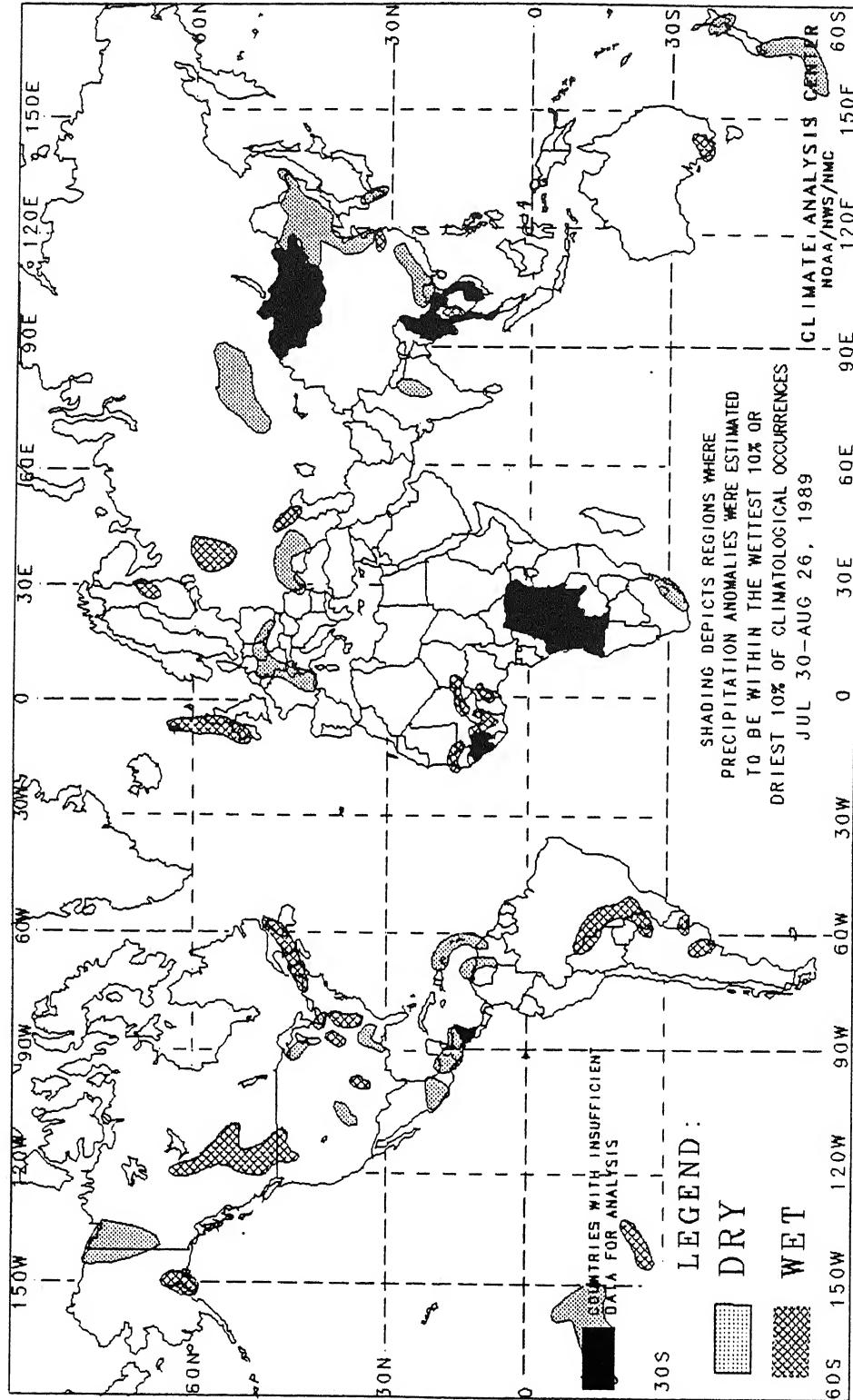
Arring stations
ympic
v night
he

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL PRECIPITATION ANOMALIES

4 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

SPECIAL CLIMATE SUMMARY

CLIMATE ANALYSIS CENTER, NMC
NATIONAL WEATHER SERVICE, NOAA

MEAGER RAINS HAVE FALLEN NORTH AND WEST OF THE BLACK SEA SINCE JULY 1

ittle precipitation has fallen recently over portions of eastern Europe and European U.S.S.R. that the north and west of the Black Sea. Since July 1, generally less than 25 mm was observed in ne eastern Bulgaria, Romania, and in most of southern Ukraine (see Figure 1). The lowest totals und in the immediate area of the Black Sea and over south-central Ukraine.

While most of the area received near to above normal precipitation for the same time period last scarce rainfall this season has yielded deficits that vary from 50 to 100 mm (see Figure 2). Only ern Moldavia, eastern Ukraine, and southeastern Ukraine near the Sea of Azov have noted near il precipitation (see Figure 3). Corn crops in the region were stressed by the moisture shortage. ver, dry fields and slightly above normal temperatures have aided the harvesting of spring wheat.

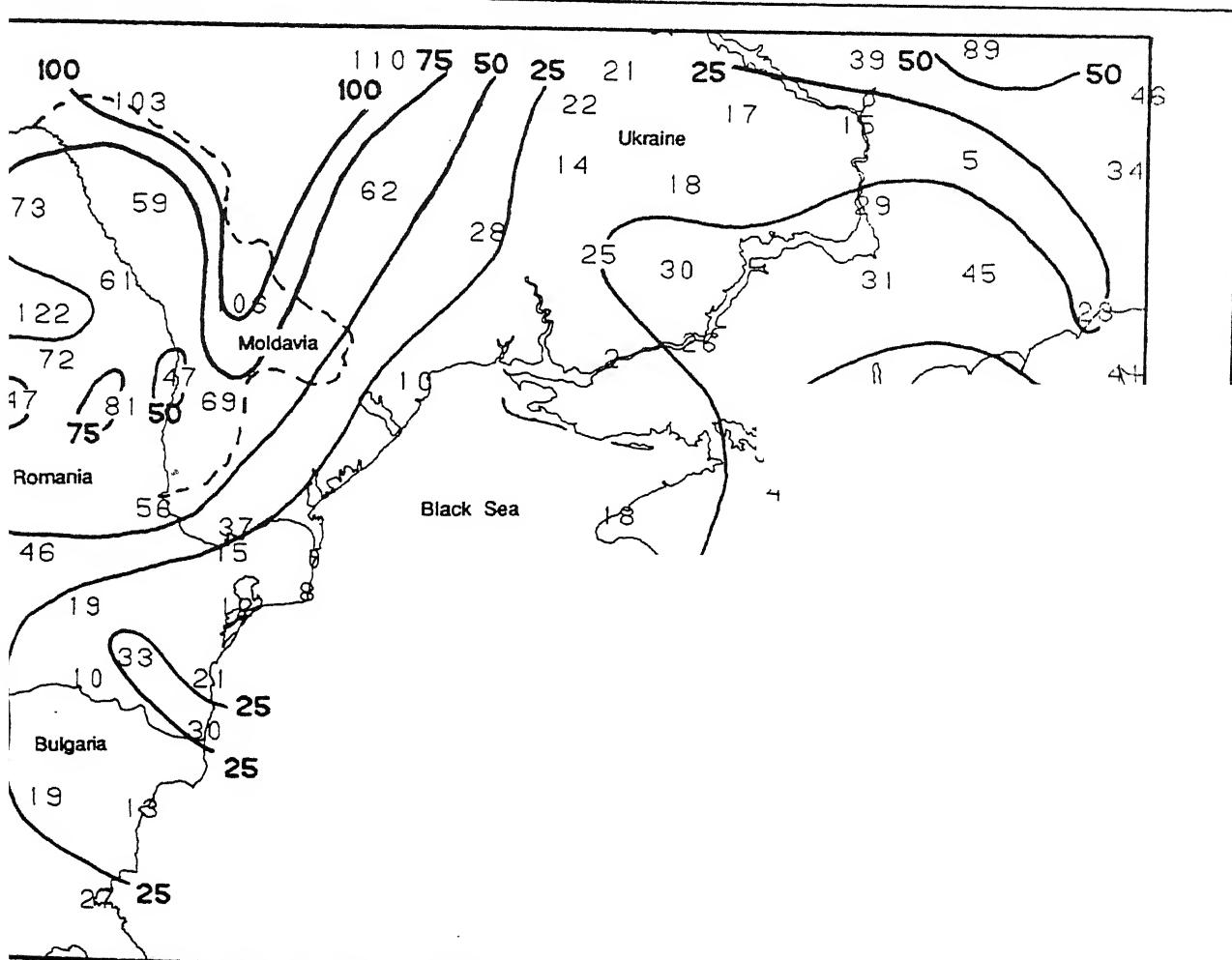


Figure 1. Total precipitation (mm) during July 1 - 31, 1973. Precipitation was recorded 90% (51 days) or more of the days for 25, 50, 75, and 100 mm. Under 25 mm of rain has fallen in the western and northern coasts of the Black Sea.

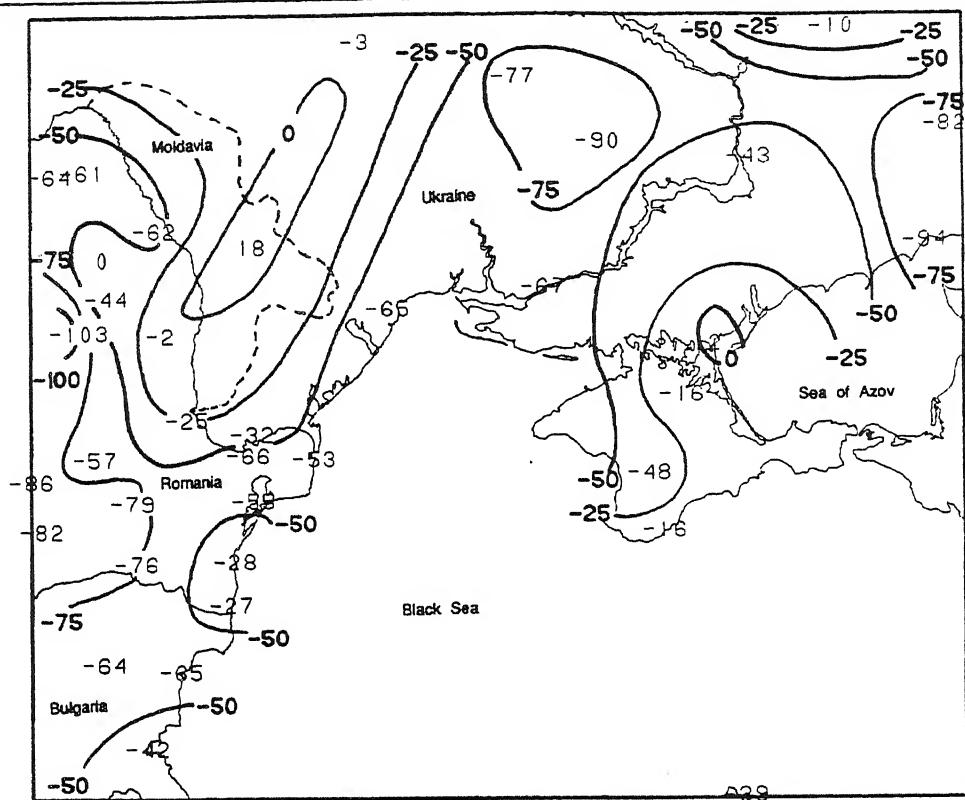


Figure 2. Departure from normal precipitation (mm) during July 1 - August 26, 1989 (57 days). A station required 90% (51 days) or more of the days for inclusion. Isopleths are only drawn for 0, -25, -50, -75, and -100 mm. The greatest deficits (more than 75 mm) were located in the south-central and southeastern Ukraine and in parts of eastern Romania and Bulgaria.

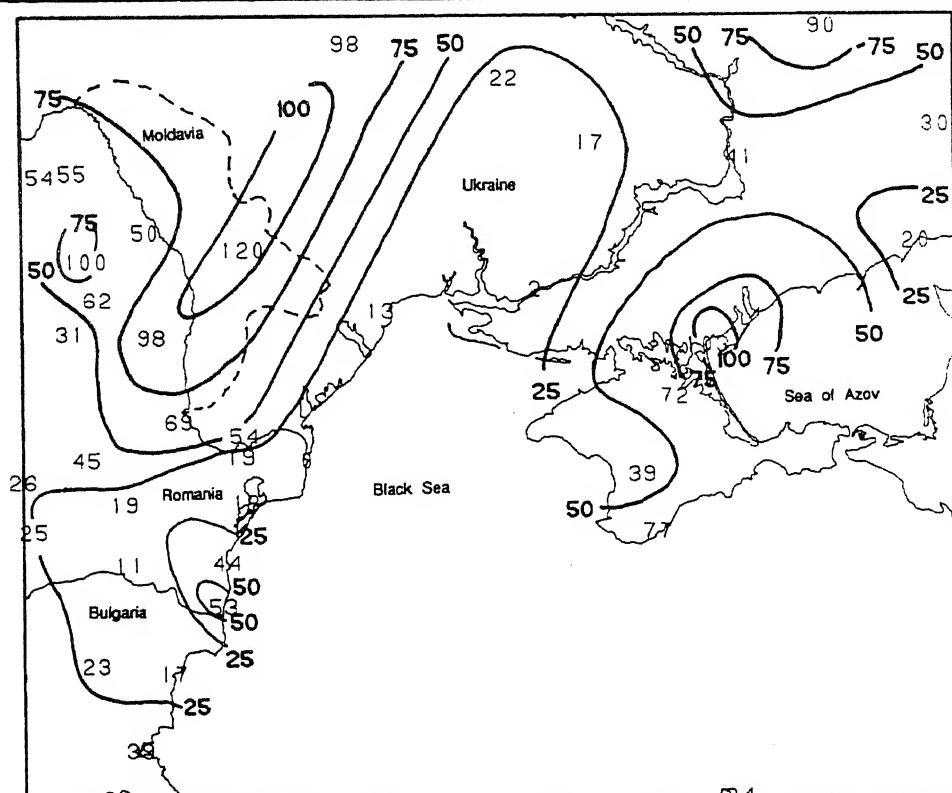


Figure 3. Percent of normal precipitation during July 1 - August 26, 1989 (57 days). A station required 90% (51 days) or more of the days for inclusion. Isopleths are only drawn for 25, 50, 75, and 100%. Much of the Black Sea Lowlands and the eastern sections of Romania and Bulgaria have received less than half the normal precipitation since July 1.

